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EXAMINER
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DICUS, TAMRA

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

gm  
3-13-08  
Application Number: ~~11/184,580~~  
Filing Date: ~~July 20, 2005~~  
Appellant(s): ~~LO, TSUNG-LAI~~

09/782835

2/14/01

Quintens et al.

\_\_\_\_\_  
Joseph T. Guy, Ph. D.  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 12/11/07 appealing from the Office action mailed  
5/24/07.

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**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,478,631	KAWANO ET. AL.	12-1995
5,965,252	SANTO ET AL.	10-1999
6,277,476	SHAW-KLEIN ET AL.	08-2001
6,022,440	NORDEEN ET AL.	02-2000

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6,238,784	MOCHIZUKI ET AL.	05-2001
6,187,430	MUKOYOSHI ET AL.	02-2001

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

a) Claims 1, 6-8, 10, 16, and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Santo et al.

Kawano teaches according to instant claim 1, an ink jet recording comprising a support (substrate of inherently opaque paper or resin-coated paper, 8:60-68, 9:1-10, 11:1-5, meeting wet strength paper of instant claim 1 and opaque further to instant claim 16), and an ink receiving layer consisting essentially of an inorganic porous silica pigment (Examples 4-6, per instant claim 1), binder modified polyvinyl alcohol (4:53, 6:4-5), and film-forming polymer latexes inherently having a glass transition temp lower than 50 degrees C selected from SBR, methacrylate-butadiene copolymers, and acrylic and methacrylate ester copolymer latexes (styrene-butadiene and acrylate latex, 4:59-68, 5:60-68, 6:33-47, per instant claims 1, 6-8). A top layer is also employed at 7:10-15, 43-45, per instant claim 20. Kawano also teaches an amorphous silica size of below 15 microns (meeting applicant's range of between 1 and 15 microns, per instant claim 4). Kawano discloses the cationic mordant per instant claims 10 and

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22-23 at 6:56-57, in the top layer and agents listed per claim 24 (see 2:59-68, 7:10-14, 8:1-68).

Kawano does not teach the dry coverage of instant claim 21. However, it is submitted that the optimal and/or claimed values of the respective material would have been obvious to the skilled artisan at the time the invention is made since it has long being held that the discovery of an optimum value of a respective result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272,205 USPQ 215(CCPA 1980). In this case, dry coverage affects the absorbency of the ink as well as smear resistance and durability. Claims 1, 4, 6-8, 10, 16 and 20-24 are addressed.

Kawano does not expressly teach silanol modified PVA, but does teach general modified PVA are conventionally used as aforementioned. It should be noted there are two interpretations of claim 1(b). The first being the section specifies a “binder” or a “binder mixture with silanol modified polyvinyl alcohol”. The second being the section specifies a “binder or binder mixture” with a silanol modified polyvinyl alcohol. The point being, in one interpretation, the silanol modified polyvinyl alcohol is not required. This is difficult to resolve since in the second interpretation the difference between a binder and a binder mixture is not clear since binder is generic and inherently includes mixtures and blends. However, the examiner believes Appellant intends the silanol modified polyvinyl alcohol to be a required part of the claimed invention and thus, the rejections presented are directed towards this interpretation.

Santo teaches an ink jet recording media using also as a binder, a specific type of modified PVA such as silanol modified polyvinyl alcohol (9:64-10:30, 10:8-10) used for ecology (10:5-10).

It would have been obvious to one having ordinary skill in the art to have modified the ink jet media of Kawano to use silanol modified PVA because Kawano suggests modified PVA, but just not a specific modified PVA and Santo teaches silanol modified PVA serves ecology purposes (10:5-10) and it useful in ink jet recording media.

b) Claims 1, 4-8, 10, 16-18, and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al in view of Shaw-Klein et al. (SK).

Kawano teaches according to instant claim 1, an ink jet recording comprising a support (substrate of inherently opaque paper or resin-coated paper, 8:60-68, 9:1-10, 11:1-5, meeting wet strength paper of instant claim 1 and opaque further to instant claim 16), and an ink receiving layer consisting essentially of an inorganic porous silica pigment (Examples 4-6, per instant claim 1), binder modified polyvinyl alcohol (4:53, 6:4-5), and film-forming polymer latexes inherently having a glass transition temp lower than 50 degrees C selected from SBR, methacrylate-butadiene copolymers, and acrylic and methacrylate ester copolymer latexes (styrene-butadiene and acrylate latex, 4:59-68, 5:60-68, 6:33-47, per instant claims 1, 6-8). A top layer is also employed at 7:10-15, 43-45, per instant claim 20. Kawano also teaches an amorphous silica size of below 15 microns (meeting applicant's range of between 1 and 15 microns, per instant claim 4). Kawano discloses the cationic mordant per instant claims 10 and 22-23 at 6:56-57, in the top layer and agents listed per claim 24 (see 2:59-68, 7:10-14, 8:1-68). Kawano does not teach the dry coverage of instant claim 21. However, It is submitted the optimal and/or claimed values of the respective material would have been obvious to the skilled artisan at the time the invention is made since it has long being held that such discovery, such as

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an optimum value of the respective result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272,205 USPQ 215(CCPA 1980). In this case, dry coverage affects the absorbency of the ink as well as smear resistance and durability. Claims 1, 4, 6-8, 10, 16 and 20-24 are addressed.

As set forth above, Kawano does not expressly teach silanol modified PVA, but does teach general modified PVA are conventionally used as aforementioned. It should be noted there are two interpretations of claim 1(b). The first being the section specifies a “binder” or a “binder mixture with silanol modified polyvinyl alcohol”. The second being the section specifies a “binder or binder mixture” with a silanol modified polyvinyl alcohol. The point being, in one interpretation, the silanol modified polyvinyl alcohol is not required. This is difficult to resolve since in the second interpretation the difference between a binder and a binder mixture is not clear since binder is generic and inherently includes mixtures and blends. However, the examiner believes Appellant intends the silanol modified polyvinyl alcohol to be a required part of the claimed invention and thus, the rejections presented are directed towards this interpretation.

Kawano also does not expressly disclose the modification degree range of silanol and the viscosity requirements of the aqueous solution of instant claim 5 or producing silanol modified PVA from hydrolyzing copolymer vinyl acetate and silane monomer vinyltrimethoxysilane per instant claim 17. Also Kawano is silent to teaching PVA modified with the silanes of instant claim 18.

SK teaches silanol modified PVA reacted with silanes having hydrolysable groups such as alkoxysilanes including those of instant claims 17 and 18 (3:50-60, vinyltrimethoxysilane, 3-

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methacryloxypropyltrimethoxysilane, and b-(3,4-epoxycyclohexyl)ethyltrimethoxysilane) for use in ink receiving layers. SK teaches the use of these materials results in enhanced water resistance and an improvement of waterfastness (3:14-30, 7:1-30, 7:50-55)

It would have been obvious to one of ordinary skill in the art to have modified the ink jet media of Kawano to include a silanol PVA modified as claimed because Kawano generally teaches modified PVA but not which one and SK teaches a preferred modified PVA that incorporates silane group agents for ease of handling and reactivity within an ink receiving layer yielding enhanced water resistance and an improvement of waterfastness (3:14-60, 4:10-40, 7:1-30, 7:50-55, SK). The modification degree and viscosity are properties of the PVA and as such are either inherent to the end product given the similar chemical make up and performance or if not inherent, obvious once the invention of SK is made.

c) Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Shaw-Klein et al. (SK) further in view of Mochizuki et al. and USPN 6,022,440 to Nordeen et al.

The features of Kawano et al. in view of Shaw-Klein et al. (SK) are set forth above.

With regard to claims 11-13, and 15, the combination is silent to an ink jet recording element having an adhesive polymer disposed between a support and ink receiving layer. However, Kawano suggests including a bottom layer as an under coat as per instant claim 11.

Nordeen teaches an ink jet image composite and the method of making such, including an adhesive polymer disposed between a support and ink receptive (receiving) layer, where the adhesive may be a releasable thermoplastic layer of suitable adhesive polymers such as



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copolymer styrene-butadiene, acrylics, vinyl acetates (vinyl acetates includes vinyl esters), and their combinations at col. 2, lines 33-40 and col. 6, lines 41-55.

With regards to claims 12-14, Mochizuki teaches several examples of acrylate latex polymers at col. 6, lines 30-44 including the copolymers of instant claims 12 and 14, and the polyacrylate latex of instant claim 13.

It is well known in the art that the copolymers and polymers claimed are adhesive polymers as taught by Nordeen at col. 6, lines 46-55.

It would have been obvious to one with ordinary skill in the art to modify the combination of Kawano and SK to include an adhesive layer as claimed because Mochizuki and Nordeen provide adhesive latex polymers and copolymers to ink receiving media in order to produce an ink jet recording element which provides additional assistance for release of the ink receiving layer from the support and provide added protection for a transferred image composite at col. 6, lines 41-46.

d) Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Santo et al. and Mochizuki et al. and further in view of USPN 6,022,440 to Nordeen et al.

Kawano et al. in view of Santo et al. is relied upon above for all it teaches as set forth above.

With regard to claims 11-13, and 15, the combination is silent to an ink jet recording element having an adhesive polymer disposed between a support and ink receiving layer.

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However, Santo suggests including an easy-adhesion layer as an under coat as per instant claim 11.

Nordeen teaches an ink jet image composite and the method of making such, including an adhesive polymer disposed between a support and ink receptive (receiving) layer, where the adhesive may be a releasable thermoplastic layer of suitable adhesive polymers such as copolymer styrene-butadiene, acrylics, vinyl acetates (vinyl acetates includes vinyl esters), and their combinations at col. 2, lines 33-40 and col. 6, lines 41-55.

With regards to claims 12-14, Mochizuki teaches several examples of acrylate latex polymers at col. 6, lines 30-44 including the copolymers of instant claims 12 and 14, and the polyacrylate latex of instant claim 13.

It is well known in the art that the copolymers and polymers claimed are adhesive polymers as taught by Nordeen at col. 6, lines 46-55.

It would have been obvious to one with ordinary skill in the art to modify the combination to include an adhesive layer as claimed because Santo suggests an adhesive undercoat layer and Mochizuki and Nordeen provide adhesive latex polymers and copolymers in order to produce an ink jet recording element which provides additional assistance for release of the ink receiving layer from the support and provide added protection for a transferred image composite at col. 6, lines 41-46.

e) Claims 10 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Santo et al., and alternatively in view of SK and further in view of Mukoyoshi.

The combinations are relied upon above.

Mukoyoshi teaches an ink jet recording having amorphous silica, styrene-butadiene copolymer and epichlorohydrin-dimethylamine copolymer (dimethylamine-epichlorohydrine copolymer equivalent) at col. 11, lines 30-60 exhibiting an effect of enhancing the water-resistance of printed ink images.

It would have been obvious to one of ordinary skill in the art to modify the combination to include dimethylamine-epichlorohydrine copolymer because Mukoyoshi teaches an ink jet recording exhibiting an effect of enhancing the water-resistance of printed ink images (Abstract, col. 9, lines 1-40, col. 10, lines 60-68, and col. 11, lines 30-60 of Mukoyoshi).

#### **(10) Response to Argument**

As a minor note, the rejection statement using Kawano and Santo above, inadvertently inserted cancelled claim 2, instead of claim 4 (see page 4 of this Answer, second to the last sentence addressing claim 4 and at the end of the rejection (same as denoted midway on page 3 of the Final Office Action)).

In response to Appellant's arguments over Kawano and Santo, Appellant argues that the combination is in direct conflict with Santo et al., namely for using Santo to explain the sole limitation "silanol modified" PVA missing from Kawano, alleging if one skilled in the art used the silanol modified PVA for the properties expected therein they would also reduce the amount of silica to less than 50% by weight, and not expect to realize the advantages. This argument is not persuasive because as previously answered and as acknowledged by Appellant, Santo is not relied upon for teaching silica since Kawano already provides for the porous inorganic silica as required by Appellant (see for example, col. 5, lines 34-45 and Examples 4-6) in addition to all of the other

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ingredients in the ink receiving layer. Moreover, Appellant has not proven what would happen by submission of evidence such as objective test results. Also in regard to Appellant's direction to untreated pigments, untreated pigments are not commensurate in scope with the instant claims.

Appellant alleges there are no advantages to the proposed combination and it is in contradiction to the cited art teachings. However, the primary reference of Kawano generally teaches a water-soluble binder such as a modified PVA (6:2-5) in the ink receiving layer and the specific required PVA of Appellant is provided by the secondary reference and is from the same art area. The fact that the primary reference does not point to how it is modified, by silanol, is resolved by Santo who explicitly teaches the specific silanol modified PVA also as a water-soluble binder, and also in an ink jet receiving layer for the advantage of ecology purposes (10:9-10).

Appellant argues bonding and premature coupling reactions in the combination over Kawano and Smith-Klein (SK), alleging what would happen and arguing hindsight based on expectation of inoperability. This argument is not persuasive because in line with what is answered above, Kawano teaches every limitation except specifically how their disclosed modified PVA is modified which is remedied by SK's teaching of the same starting reactants as Appellant claims (see instant claims 17 and 18) yielding in what must be the silanol modified PVA for recognized advantages such as excellent waterfastness and enhanced water resistance (see 3:28-29 and the results for Ex. 7 using said PVA in col. 7 of SK). Thus allegations that the film would be ruined and the utility of the media be destroyed is not convincing. Moreover, regarding the question, "Why would one of skill in the art want to react the ingredients prematurely?" is not commensurate in scope with the claims as they are absent to reaction rates. Also, evidence has not been submitted to show inoperability nor the expectation of inoperability.

Appellant argues claims 11-15 over the Kawano, SK, Mochizuki and Nordeen rejection, alleging Nordeen and Mochizuki would be expected to react differently rendering the material inoperative if used. However, no evidence has been submitted to prove this.

Appellant argues claims 11-15 over the Kawano, Santo, Mochizuki and Nordeen combination, alleging the media inoperative due to the combining of silanol groups of the PVA and silica reactivity and weight percentage of silica. However, Appellant has not provided a persuasive argument because the arguments are not commensurate in scope and no evidence has been submitted to prove this.

Appellant argues claims 10 and 23 in further view of Mukoyoshi, alleging SK only uses silanol modified PVA in the ink layer, but the silica is in another layer. This is not convincing because again, the porous silica requirement is met by Kawano. Appellant argues Smith-Klein et al. augments the teachings of Santo et al. since the necessity of a low amount of silica is expected to reduce the reaction between the silica and silanol groups of the PVA. Again, SK is used only to teach the modified PVA of Kawano can specifically be silanol modified PVA for the advantages set forth above. Silica and the amounts are provided by Kawano. Moreover, SK and Santo were never used in combination to reject independent claim 1. All arguments to this alleged combination is therefore moot.

Appellant argues "Mukoyoshi is cited as teaching specific adhesive polymers. There is no teaching in Mukoyoshi whereby a skilled artisan would consider ignoring the teachings of Santo et al. and Smith-Klein et al. with regards to the teachings against combining silica and silanol modified PVA". This argument is not persuasive because Mukoyoshi was used to teach the exact same cationic epichlorohydrin-dimethylamine copolymer (see col. 11, line 44, same as dimethylamine-

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epichlorohydrine copolymer) for enhancing the water-resistance of printed ink images (see 11:15-60).

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Tamra L. Dicus/

/Terrel Morris/  
Supervisory Patent Examiner  
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**Conferees:**

/Gregory L Mills/  
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